

Remarks

Favorable reconsideration of this application is requested in view of the following remarks. For the reasons set forth below, Applicants respectfully submit that the claimed invention is allowable over the cited references.

Claims 1 – 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Osterheld et al* (U.S. Patent 6,319,098 hereinafter, *Osterheld*).

Claims 9 – 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Osterheld et al* in view of *Sugiyama et al.* (EP 0967049 A1 hereinafter, *EP '049*)

Claim 20 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Osterheld et al*, as applied to claim 18, and further in view of Applicant's Admitted Prior Art (*APA*) of FIG. 1A.

Claims 1 – 8

Applicants respectfully reiterate, with respect to the §103 rejection, the Office Action does not establish a *prima facie* case of obviousness. A *prima facie* case of obviousness requires both: a complete correspondence between the asserted prior art and the claimed invention, and evidence that a skilled artisan would be motivated to modify the *Osterheld* patent as asserted. In this instance, the Office Action has not satisfied either requirement.

Osterheld, as the Office Action states, does not disclose the steps of terminating the slurry dispense, the specific pressure of the spray, and the specific speed of the pad. The claimed invention was developed through experimentation not taught by *Osterheld*. Refer to FIGS. 7 and 8. The claimed invention achieved a reduction of defect density of about 15.15% (from 0.25 defects/ μm^2 to about 0.21 defects/ μm^2) and a reduction in the standard deviation of the process from 8.2% to about 6.1%. The lower standard deviation indicates better repeatability of the process.

Osterheld does not suggest or teach Applicants' claimed invention. Applicants' have addressed "*a need for a method and/or apparatus which will quickly remove the slurry from the pad, thus more accurately controlling the removal rate of the substrate.*"

(Paragraph 2, Page 3). *Osterheld* has not suggested the solution to the aforementioned need. In that,

A patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the subject matter as a whole which should always be considered in determining the obviousness of an invention under 35 USC §103. (*In re Spinnable*, 405 F. 2d 578, 160 USPQ 237 (CCPA 1969))

Additionally, the Office Action's assertion that "*the steps of terminating the slurry dispense would have been obvious to. . .since it is assumed that the slurry would not run indefinitely throughout the polishing of the wafer and at some point in time there would be a step of stopping the dispensing of slurry. (Office Action Page 3, Paragraph 2)*" lacks support from the cited reference, in that:

The mere absence [from the reference] of an explicit requirement [of the claim] cannot reasonably be construed as an affirmative statement that [the requirement is in the reference.] (*In re Evanega*, 829 F. 2d 1110, 4 USPQ 2d 1249 (Fed. Cir. 1987))

The present Office Action cites, *the specific ranges of pressure would have been obvious. . .the discovering the optimum or workable ranges involves only routine skill in the art. (Office Action Page 3, Paragraph 2)* Furthermore, the previous Office Action cites *Osterheld*, "*A polishing step and recipe are selected to polish the desired material(s) to achieve desired results. Multiple polishing steps, recipes, pads etc. can be employed to achieve these results.*" (col. 8, lines 28 – 30). From *Osterheld*'s statement and the above statement in the present Office Action, one skilled in the art is not taught Applicants' claimed invention. There may be a myriad of solutions possible with each solution requiring experimentation. However, without further detail and enablement, it is unlikely one skilled in the art would be able to infer Applicants' claimed invention based on *Osterheld* and *only routine skill in the art* without having performed undue experimentation.

Consequently, there must be a basis in the art for combining or modifying references. Applicants' claimed invention with the steps of terminating the slurry dispense, the specific pressure of the spray, and the specific speed of the pad *Osterheld et al.* MPEP §2143.01 provides:

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The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

Assuming that “the discovering the optimum or workable ranges involves only routine skill in the art. (Office Action Page 3).” There is no basis from the cited reference to discover Applicant’s optimum workable ranges. An “Obvious to Try” modification does not establish *prima facie* obviousness (*In re Clinton*, 527, F. 2d 1226, 188USPQ 365)

In that the Office Action has failed to establish a case of *prima facie* obviousness, claims 1 – 8 are allowable over the cited reference. Applicants believe that the §103 rejections have been addressed.

Claims 9 –19

With respect to the §103 rejection, the Office Action has not established a *prima facie* case of obviousness *Osterheld*, as the Office Action states, does not disclose the rotating the pad at a second speed. The discussion presented earlier with respect to claims 1 – 8 applies, as well. Rotating the pad at a second speed (during the spraying step) is not taught by *Osterheld*. Thus, Applicants respectfully assert that there is not basis for applying this reference here, as well.

With respect to *EP '049*, the Office Action is focusing only on an element of the claimed invention. For a proper §103, all limitations of the claims must be evaluated, the invention must be considered “as a whole”, in that:

The invention cannot be tested on the basis of whether the “idea” of . . . is patentable. Under the patent statute, Title 35 U.S.C., “ideas” are not patentable; claimed structures and methods are. Reducing a claimed invention to an “idea” and then determining patentability of that “idea” is error. [citation omitted] Analysis properly begins with the claims, for they measure and define the invention.

The “difference” may have seemed slight (as has often been the case with some of history’s great inventions, e.g., the telephone) but it may also have been the key to success and advancement in the art resulting from the invention. Further, it is irrelevant in determining obviousness that all or all other aspects of the claim may have been well known in the art. (*Jones v. Hardy*, 727 F.2d 1524, 220 USPQ 1021 (Fed. Cir 1984))

Consequently, *EP '049*, as applied to Applicants' claimed invention, is not a proper §103 reference alone or in combination with *Osterheld*.

In regard to claim 13, the Office Action's assertion that "*it is inherent in Osterheld to have a control device that controls the dispense of slurry from the slurry dispense bar at a first time and the dispense of high pressure fluid from the slurry dispense bar at a second time. It would have been obvious to have utilized the control device to control rotational speed of the platen. . . (Office Action Page 4, Paragraph 1)*" Lacks support from the cited reference. Whether a control device could have been utilized to control rotational speed of the platen does not support the premise of a prima facie case of obviousness under §103. As discussed earlier, there may be myriad of solutions possible with each solution requiring experimentation.

In regard to claims 10 – 12 and 14 – 16, the Office Action's assertions of "*the specific ranges of pressure and speed would have been obvious. . . the discovering the optimum or workable ranges involves only routine skill [sic] art.*" As discussed earlier, there is no basis from the cited reference to discover Applicant's optimum workable ranges. An "Obvious to Try" modification does not establish *prima facie* obviousness (*In re Clinton*, 527, F. 2d 1226, 188USPQ 365,

Claim 20

With respect to claim 20, the Office Action states that *Osterheld* in view of *EP '049* does not disclose the specific location of the slurry dispense bar. From the discussion presented earlier, alone or in combination, these two references do not teach Applicants' claimed invention. With respect to the APA, the APA uses a *dispensing tube* to dispense slurry. As noted, "*the CMP machine 100 also includes a slurry dispense tube 107. . . (Specification Page 2, Paragraph 1)*" In contrast, Applicants' claimed invention uses a *slurry dispense bar*. Refer to FIG.3 and FIG. 4. The *slurry dispense bar* is not taught by the cited references. Consequently, the APA does not teach Applicants' claimed invention alone or in combination with *Osterheld* and *EP '049*.

In that the Office Action has failed to establish a case of *prima facie* obviousness, claims 9 – 19, and 20 are allowable over the cited references. Applicants believe that the §103 rejections have been addressed

Conclusion

Applicants believe they have addressed the Examiner's concerns and that claims 1 through 20 are in a condition for allowance. Applicants respectfully request that a Notice of Allowance be granted.

Please charge any fees other than the issue fee and credit any overpayments to Deposit Account 14-1270.

Respectfully submitted,

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